"S" BRIDGE
(Bridge No. 35-40-7.52)
(Bridge No. 35-40-7.57)
U.S. Route 40 spanning Little Wheeling Creek
Elm Grove
Ohio County
West Virginia

HAER No. WV-65

HAER
WVA,
35-ELGRO,
2-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
Philadelphia Support Office
U.S. Custom House
200 Chestnut Street
Philadelphia, P.A. 19106

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Location: U. S. Route 40 spanning Little Wheeling Creek, Elm Grove, Ohio County, West Virginia

UTM: 17/530330/4432930
17/530380/4432960

Quad: Wheeling, West Virginia - Ohio.

Date of Construction: 1935

Engineer: State Road Commission (West Virginia) L. L. Jemison, Bridge Engineer; Mortimer W. Smith, Chief Engineer; Ernest L. Bailey, Commissioner

Fabricator: C. C. Dodd Construction Co., Spencer, West Virginia, superstructure and substructure. Arthur V. Williams Co., Martins Ferry, Ohio, approaches.

Owner: Originally, the State Road Commission. Currently, the West Virginia Department of Transportation, Division of Highways.

Present Use: Vehicular and pedestrian traffic

Significance: The "S" Bridge is the second structure at this location to bear the same name. The original structure was at the center of a small controversy when it was constructed in 1818. The present bridge was constructed with federal money as part of an economic recovery program during the Great Depression of the 1930s.

Project Information: The project is part of the statewide bridge replacement and upgrading program. An evaluation (1992) advised replacement of the structure. To mitigate the effect, the West Virginia State Historic Preservation Office stipulated documentation and a marketing plan to find a potential owner. This documentation was undertaken to fulfill the first stipulation.

Brian Berkley
Michael Baker Jr., Inc.
319 Washington Street West
Charleston, WV 25302

History of the Crossing

When the National Road was proposed in Washington in 1806, there was intense competition between communities to the west who each wanted the route to pass through their locales. Among the proponents of this internal improvement were Albert Gallatin and Henry Clay. The political influence of these two men played an extremely important role in selecting which community would be a stop on the road to the west.[1] Such was the case in Wheeling. Clay had close ties to members of the Wheeling social circle, and especially with Moses and Lydia Shepherd.[2] Moses and Lydia were gracious recipients of Clay's influence, and in adulation, erected a statue dedicated to him near their home.[3]

Moses Shepherd secured a contract from the federal government in 1814 to build the portion of the National Road from Pennsylvania to Wheeling.[4] The route had been selected, but it lay on the opposite side of Little Wheeling Creek and some distance away from the Shepherd's estate. Shepherd, thinking that the road would enhance the value of his land, realigned it to pass in front of his magnificent house.[5] Other stories contend that it was Lydia who desired the road pass her home.[6] In order to accomplish the task of shifting the road, Moses needed to build two bridges and lengthen the road. This additional construction increased the cost of the segment he was contracted to build, and in 1818, when he completed the section, he submitted a claim to the U. S. government for almost $100,000.[7] He never received full payment. For almost fourteen years he tried, in vain, to secure payment for the expenses he incurred. After Shepherd's death in 1832, his wife Lydia continued to lobby congress for repayment. The motion was tabled during the Committee on Public Lands meeting, January 18, 1834.[8] Only through the help of Henry Clay, did she receive a portion of that sum.[9]

There are multiple accounts of how the bridge (and subsequent replacement) was named. Romantic accounts refer to the bridge as the "S" (for Shepherd)[10] Bridge, whereas scholarly accounts depict numerous "S" bridges on the National Road.[11] Apparently

the term "S" applied to the alignment the crossing and roadway made when a stream or river was crossed. It was easier to construct a simple masonry arch straight across a stream instead of at an angle. The approaches were then aligned to meet the bridge, resulting in the unique "S" shape.[12]

History of the Bridge

During the Great Depression of the 1930s, many laws were passed by Congress in an attempt to stimulate economic recovery. The National Industrial Recovery Act of 1933 created the National Recovery Administration, which administered grants to individual states, and represented an expenditure of federal funds by the states for specific projects.[13] In 1934, $4,474,234 was given to West Virginia for road and bridge projects.[14] The funds were classified under three distinct groups: N.R.H. when on primary state roads in the Federal Aid System; N.R.M. when on primary state roads on Federal Aid System through municipalities; and N.R.S. when on what the U.S. Bureau of Public Roads designates as secondary or feeder roads.[15] The "S" Bridge was classified as both a N.R.H. and a N.R.M. project.

The state had plans to replace the extant structure as early as 1932, but official documents date the engineering plans as being completed in May of 1934, and undergoing revisions in June and August of that year.[16] Bids were sought for construction, and the contract was awarded to the C. C. Dodd Construction Company of Spencer, West Virginia for $67,921 on August 21, 1934.[17] Construction on the bridge began after this date and was completed by June, 1935.

Design specifications for the bridge called for a steel truss span over the Baltimore and Ohio Railroad (B & O), and a five-span, cast-in-place reinforced concrete bridge over Little Wheeling Creek. The project also realigned the existing road[18] which was let under a separate contract to the Arthur V. Williams Company of Martins Ferry, Ohio for $18,012 on June 18, 1935.[19]

Since its completion in 1935, the "S" Bridge has undergone periodic repairs and resurfacing, mostly due to normal wear and tear. The B & O Railroad property now belongs to CSX, and the tracks have been removed and the line abandoned. There have been a few vehicular accidents that caused an unspecified amount of damage to the bridge and its components. None of these incidents had a lasting effect on the structural stability of the bridge.[20] The bridge, however, has deteriorated since its construction and is no longer capable of handling the amount of traffic it is projected to carry.[21] Currently, a replacement and realignment project is planned.

Bridge Specifications

The "S" Bridge is composed of three distinct structure types: a steel stringer approach span, a steel truss span, and a five-span reinforced concrete bridge. The approach span is supported by a concrete abutment.

The truss is a riveted steel, camelback pony truss main span. It is supported by two reinforced concrete piers. The overall length of the bridge is 160' and the clear width is 30' with a 5'-5" sidewalk on the upstream (east) side.[22]

The reinforced concrete bridge consists of five simple concrete deck girder spans supported by five reinforced concrete full - height piers and a concrete abutment. The overall length of the bridge is 273'-9" and the clear width is 30' with a 5' sidewalk on the upstream (east) side. The truss bridge shares a common pier with the concrete bridge.[23]

The State Road Commission supplied material estimates for contractors to use in bidding for the construction phase. The table that follows is a compilation of prices derived from the actual bids received for each project during the respective year. The costs quoted in the table and amounts of materials called for in the bridge plans are almost $60,000, and there are several additional expenditures associated with the project with no

reference to their cost.

Estimates for the truss bridge:[24]

1.	Class A Concrete	168 cubic yards
2.	Assorted diameter bars (see Appendix A)	34,440 pounds
3.	Electric Welding Wire Fabric	170 pounds
4.	Structural Steel	311,000 pounds
5.	Cast Steel	7,350 pounds
6.	Lead Plates	400 pounds
7.	W. I. Blast Plates	970 pounds

Estimates for the concrete bridge:[25]

1.	Dry Excavation	1,150 cubic yards
2.	Wet Excavation	154 cubic yards
3.	Rock Excavation	112 cubic yards
4.	Class A Concrete (superstructure)	846 cubic yards
5.	Class A Concrete (substructure)	343 cubic yards
6.	Class B Concrete	833 cubic yards
7.	Concrete Railing	551 lineal feet
8.	Assorted diameter bars (see App. A)	198,560 pounds
9.	Bronze Plates	1,660 pounds

The following table is the average price bid for items used in the construction of bridges in West Virginia from 1933 to 1935.[26]

Year	A Conc. per C.Y.	B Conc. per C.Y.	Reinf. Steel per lb.	Struc. Steel per lb.	Ashlar Masonry per C.Y.
1935	19.65	16.30	.046	.0513	----
1934	16.70	13.06	.0403	.0433	----
1933	12.42	8.59	.036	.039	----

Builder

The C. C. Dodd Company was founded by Chester Curtin Dodd in 1929. Dodd had a long history of building bridges and other public works throughout West Virginia and neighboring states. He came to Spencer from Dubois, Pennsylvania in the fall of 1921 after graduating as valedictorian from high school. He joined his brother-in-law, Henry Minns, in the bridge building business and spent several years working for Hardman-Minns Construction Company, mostly building sidewalks and culverts, before beginning bridge building. Dodd worked his way up the employment ladder, becoming foreman and superintendent on many projects.[27]

Following the unforseen death of Minns in 1929, Dodd started his own company, and five years later built the "S" Bridge. He later took a partner, Nathan Archer, and their firm, Dodd and Archer, built many more bridges in the state and surrounding area. When World War II broke out, Dodd and Archer were building the bridge across the Tygart River on U. S. 33 in Norton, West Virginia. It would be one of the last bridges they built together.[28]

During the war Dodd began mining coal as the bridge building business slowed. After the war, he again returned to bridge building, but the nature of the contracting was different. Bridges were now subcontracted out under a larger contract, and it was not as profitable. Furthermore, Dodd only had a high school education, and professional qualification standards used by various states required a professional engineer to be in the firm. These changes were an influence on Dodd's career, ultimately forcing him into other businesses. Despite these setbacks, Dodd periodically built bridges until 1968.[29]

Dodd operated other businesses unrelated to bridge building. He built a section of the West Virginia Turnpike, a floodwall in Illinois, developed oil and gas fields, and even engaged in real estate ventures. His primary interest, however, was bridge building. It gave him enormous satisfaction, and was the foundation for all of his other successful business endeavors.[30]

SOURCES OF INFORMATION

A. Engineering Drawings:

The District Six office of the West Virginia Division of Highways in Moundsville, West Virginia has retained the original plans for the bridge. There is also an extensive file with copies of the inspections that have been performed.

B. Historic Views:

There were no historic views located during this project.

C. Interviews:

Dodd, Chet, Jr. Personal Interview, Spencer, West Virginia. March 18, 1996.

Fluty, Beverley. Telephone Interview, March 2, 1996.

D. Bibliography

1. Primary Sources

Oglebay Mansion Institute. Lydia Boggs Shepherd (Cruger) Collection. Exhibit Research Files.

West Virginia Department of Transportation. Division of Highways, District Six. Bridge Files.

2. Books

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Cranmer, Gibson Lamb. History of Wheeling City and Ohio County West Virginia and Representative Citizens. Chicago:

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Hulbert, Archer Butler. Historic Highways of America: Volume 10 The Cumberland Road. Cleveland: The Arthur H. Clark Co., 1904.

Ierley, Merritt. Traveling the National Road: Across the Centuries on America's First Highway. Woodstock, NY: The Overlook Press, 1990.

James, Edwin. Account of An Expedition from Pittsburgh to the Rocky Mountains. Philadelphia: H. C. Carey and I. Lea, 1823.

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West Virginia State Road Commission. Annual Report. Charleston: State of West Virginia, 1935.

3. Articles

Committee on Public Lands. Congressional Globe January 18, 1834.

"Contracts Awarded" Engineering News Record Aug. 30, 1934: 30.

DiBartolomeo, Robert. "Lydia's Saga" State Magazine. Charleston, WV: 1972.

Hulbert, Archer Butler. "Henry Clay: Promoter of the National Road" The Chataquan Sep. 1903 to Feb. 1904, Vol. 38.

E. Likely Sources Not Yet Investigated

The Ohio Historical Society (OHS) Library and Archives in Columbus, Ohio. The OHS operates a museum on the National Road in Zanesville, Ohio and has an extensive collection, mostly pertaining to Ohio.

The Bureau of Public Roads record group at the National Archives is another source. A written request for information about extant photographs revealed that there are no photographs of the current bridge in this record group.

NOTES

[1] Hulbert, Archer Butler. "Henry Clay: Promoter of the National Road" The Chautaquan Sep. 1903 to Feb. 1904, Vol. 38: 579.

[2] Stein, Christin L. Monument Place: A Palace for Lydia (Wheeling: Oglebay Institute, 1992) 12-13. Searight, Thomas B. The Old Pike: A History of The National Road (Uniontown, PA: Published by the author, 1894) 294.

[3] Boyd, Peter. History of Northern West Virginia Panhandle embracing Ohio, Marshall, Brooke and Hancock Counties (Topeka: Historical Publishing Co., 1927) 119.

[4] Boyd, History of Northern West Virginia Panhandle, 113-114.

[5] Cranmer, Gibson Lamb. History of Wheeling City and Ohio County West Virginia and Representative Citizens (Chicago: Biographical Publishing Co., 1902) 60.

[6] DiBartolomeo, Robert. "Lydia's Saga" State Magazine. Charleston, WV: 1972, p. 4m.

[7] Hulbert, Archer Butler. Historic Highways of America: Volume 10 The Cumberland Road (Cleveland: The Arthur H. Clark Company, 1904) 54. The cost of construction was $13,000 per mile between Uniontown and Wheeling.

[8] Committee on Public Lands. Congressional Globe January 18, 1834: 97.

[9] Pfeifer, Laura and Katherine Jourdan. "Draft Nomination National Historic Landmark for Shepherd Hall." Wheeling: Northern Regional Office, State Historic Preservation Office, 1991.

[10] Fluty, Beverley. Personal Interview, March 2, 1996.

[11] Ierley, Merritt. Traveling The National Road: Across the Centuries on America's First Highway (Woodstock, NY: The Overlook Press, 1990) 105.

[12] Oglebay Mansion Institute. Lydia Boggs Shepherd (Cruger) Collection. Notes.

[13] Monthly Catalog United States Public Documents Nos. 463-474 July 1933-June 1934 (Washington: Superintendent of Documents, 1933-1934) 1306.

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Annual Report of The State Road Commission of West Virginia. (Charleston: State of West Virginia, 1934) 15.

[14] Annual Report, 15.

[15] Annual Report, 15.

[16] Plans for Substructure and Conc. D.G. Spans "S" Bridge. (Charleston: State Road Commission, 1934) Sheet 1.

[17] Annual Report, insert. "Contracts Awarded" Engineering News Record Aug. 30, 1934: 30.

[18] Plan and Profile of Overhead Crossing Site over Baltimore and Ohio Railroad and Bridge Site. (Charleston: State Road Commission, 1934) Sheet 13.

[19] Annual Report, insert.

[20] Bridge File. West Virginia Department of Transportation, Division of Highways, District Six.

[21] Bridge Inspection Report. West Virginia Division of Highways, District Six Bridge Files. March 30, 1988.

[22] Bridge Inspection Report.

[23] Bridge Inspection Report.

[24] Steel Superstructure Bridge Plans. (Charleston: State Road Commission, 1934) Sheet 1.

[25] Plans for Substructure and Conc. D.G. Spans "S" Bridge. (Charleston: State Road Commission, 1934) Sheet 1.

[26] Annual Report, 21.

[27] Dodd, Chet Jr. "Chester Curtin Dodd Sr." Roane County West Virginia Family History 1989 (Spencer: Roane County Family History Committee, 1990) 137-8.

[28] Roane County, 137-8.

[29] Dodd, Chet, Jr. Personal Interview, Spencer, West Virginia, April 18, 1996.

[30] Dodd. Personal Interview.